



Pembina County, North Dakota Cooperating Technical Partners Mapping Activity Statement

Mapping Activity Statement No. 1 – Digital Flood Insurance Rate Map Production and Development of Updated Flood Data

In accordance with the Cooperating Technical Partners (CTP) Partnership Agreement dated May 21, 2002, between Pembina County, North Dakota, and the Federal Emergency Management Agency (FEMA), Mapping Activity Statement No.1 is as follows.

1. Objective and Scope

The objective of the Flood Map Project documented in this Mapping Activity Statement for Pembina County is to develop a Digital Flood Insurance Rate Map (DFIRM) and Flood Insurance Study (FIS) report for Pembina County, North Dakota. The DFIRM panels and FIS report materials will be produced in the FEMA Countywide Format, depending on the availability of funding to produce digital mapping for the remainder of Pembina County. In addition, new and/or updated flood hazard data will be developed for a portion of the Pembina River at the City of Neche; for a portion of the Tongue River, a tributary to the Pembina River, at the City of Bathgate; and for another portion of the Tongue River upstream of the City of Cavalier (the latter depending on available data). These data will be developed using detailed-study methods.

FEMA and the following Mapping Partners will complete this Flood Map Project:

- Pembina County;
- Kadrmas, Lee & Jackson (KL&J), a contractor to Pembina County; and
- Michael Baker Jr., Inc., the FEMA Flood Map Production Coordination Contractor (MCC) for Region VIII.

The activities for this Flood Map Project, including required Quality Assurance/Quality Control (QA/QC) reviews, and the Mapping Partners that will complete them are summarized in the table below. In the table below, Pembina County is identified as “CTP.” All activities that are to be accomplished by Pembina County, KL&J, or other contractors to Pembina County that may be selected at a later date are included in the “CTP” column.

The sections of this Mapping Activity Statement that follow the table below describe the specific mapping activities associated with this Flood Map Project. Each activity description identifies the responsible Mapping Partner(s), the FEMA standards that must be met, and resultant map component.

ACTIVITY	CTP	MCC
Activity 1 – Field Surveys and Reconnaissance	X	
Activity 2 – Hydrologic Analyses	X	
Activity 3 – Independent QA/QC Review of Hydrologic Analyses		X
Activity 4 – Hydraulic Analyses	X	
Activity 5 – Independent QA/QC Review of Hydraulic Analyses		X
Activity 6 – Floodplain Mapping (Detailed Riverine Analysis)	X	
Activity 7 – Independent QA/QC Review of Floodplain Mapping		X
Activity 8 – Base Map Acquisition and Preparation	X	
Activity 9 – DFIRM Production (Non-Revised Areas)		X
Activity 10 – DFIRM Production (Merging Effective and Revised Information)	X	
Activity 10A – Application of DFIRM Graphic and Database Specifications	X	
Activity 10B – Independent QA/QC Review of DFIRM and FIS Report		X
Activity 11 – Preliminary DFIRM and FIS Report Distribution		X
Activity 12 – Post-Preliminary Processing	X	X

Activity 1 - Field Surveys and Reconnaissance

Responsible Mapping Partner: Pembina County

Scope: Pembina County shall conduct a detailed field reconnaissance of the specified study reaches for the Pembina and Tongue Rivers. The purpose of the field reconnaissance will be to determine conditions along the floodplain(s), types and numbers of hydraulic and/or flood-control structures, apparent maintenance status of existing hydraulic structures, locations of cross sections to be surveyed, and other parameters needed for the hydrologic and hydraulic analyses. Pembina County also shall, as appropriate, conduct field surveys, including obtaining channel and floodplain cross sections, identifying or establishing temporary bench marks, and obtaining the physical dimensions of hydraulic and flood-control structures.

Standards: All work under Activity 1 shall be performed in accordance with the standards specified in Section 5 of this Mapping Activity Statement.

Products: In accordance with the Technical Support Data Notebook (TSDN) format described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, the County and/or KL&J shall make the following products available to FEMA:

- A report summarizing the findings of the field reconnaissance;
- Maps and drawings that provide the detailed survey results; and
- A survey notebook containing cross sections and structural data for the Pembina and Tongue Rivers.

Appendix M may be downloaded from the FEMA Flood Hazard Mapping Web site at www.fema.gov/mit/tsd/frm_gsam.pdf.

Activity 2 – Hydrologic Analyses

Responsible Mapping Partner: Pembina County

Scope: Pembina County shall perform hydrologic analyses for the Pembina and Tongue Rivers. The County shall calculate peak flood discharges for the 10-, 2-, 1-, and 0.2-percent-annual-chance storm events using the U.S. Army Corps of Engineers (USACE) HEC-HMS computer program. These flood discharges will be the basis for subsequent hydraulic analyses of the Pembina and Tongue Rivers under Activity 4. In addition, the County shall address all concerns or questions regarding Activity 2 that are raised during the independent QA/QC review performed by the MCC under Activity 3.

Standards: All work under Activity 2 shall be performed in accordance with the standards specified in Section 5 of this Mapping Activity Statement.

Products: Upon completion of the hydrologic modeling for each study segment, the County shall submit the results of the hydrologic analyses to the MCC for an independent QA/QC review under Activity 5. In accordance with the TSDN format described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, the County shall make the following products available to FEMA:

- Digital copies of all hydrologic modeling (input and output) files for the 10-, 2-, 1-, and 0.2-percent-annual-chance storm events;
- Digital and hardcopy versions of Summary of Discharges Table presenting discharge data for the Pembina and Tongue Rivers;
- Digital and hardcopy versions of draft text for Section 3.1, Hydrologic Analyses, of FIS report; and
- Digital and hardcopy versions of all backup data used in the analysis, including work maps.

Activity 3 - Independent QA/QC Review of Hydrologic Analyses

Responsible Mapping Partner: FEMA (MCC)

Scope: The MCC shall review the technical, scientific, and other data submitted by the County under Activity 2 to ensure that the data and modeling are consistent with FEMA standards and standard engineering practices and are sufficient to revise the FIRM. This work shall include, at a minimum, the activities listed below.

- Review the submittal for technical and regulatory adequacy, completeness of required information, application/certification forms, and supporting data and documentation. The technical review will focus on the following:
 - Use of acceptable model;
 - Use of appropriate methodology;
 - Correctly applied methodology/model, including QC of input parameters;
 - Comparison with gage data and/or regression equations, if appropriate; and
 - Comparison with discharges for contiguous reaches or flooding sources.
- Maintain records of all contacts, reviews, recommendations, and actions and make them readily available to FEMA.
- Maintain an archive of all data submitted for hydrologic modeling review. All supporting data should be retained for 3 years from the date funding recipient submits its final expenditure report to FEMA.

Standards: All work under Activity 3 shall be performed in accordance with the standards specified in Section 5 of this Mapping Activity Statement.

Products: In accordance with the TSDN format described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, the MCC shall make the following products available to FEMA:

- A Summary Report that describes the findings of the independent QA/QC review; and
- Recommendations to resolve any problems that arise as a result of the QA/QC review.

Activity 4 – Hydraulic Analyses

Responsible Mapping Partner: Pembina County

Scope: Pembina County shall perform hydraulic analyses for the study reaches of the Pembina and Tongue Rivers. The hydraulic models, which will be developed using the USACE HEC-RAS computer program, shall include the 10-, 2, 1-, and 0.2-percent-annual-chance storm events based on the peak discharges computed under Activity 2.

The County shall use cross-section and field data collected under Activity 1 to perform the hydraulic analyses. The hydraulic analyses shall be used to establish flood elevations and regulatory floodways for the study reaches of the Pembina and Tongue Rivers.

The County shall use the FEMA CHECK-RAS checking program to check the reasonableness of the hydraulic analyses. To facilitate the independent QA/QC review under Activity 5, the County shall provide explanations for unresolved messages from the CHECK-RAS program, as appropriate. In addition, the County shall address all concerns or questions regarding Activity 4 that are raised during the independent QA/QC review performed by the MCC under Activity 5.

Standards: All work under Activity 4 shall be performed in accordance with the standards specified in Section 5 of this Mapping Activity Statement.

Products: Upon completion of the hydraulic modeling for each study segment, the County shall submit the results to the MCC for an independent QA/QC review under Activity 5. In accordance with the TSDN format described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, the County shall make the following products available to FEMA:

- Digital profiles of the 10-, 2-, 1- and 0.2-percent-annual-chance water-surface elevations representing existing conditions using FEMA's RASPLOT program or similar software;
- Digital and hardcopy versions of Floodway Data Table that is compatible with the DFIRM database;
- Digital and hardcopy versions of all hydraulic modeling (input and output) files;
- Digital and hardcopy versions of table with range of Manning's "n" values;
- Explanations for unresolved messages from the CHECK-RAS program, as appropriate;
- Digital and hardcopy versions of all backup data used in the analyses;
- Digital and hardcopy versions of draft text for inclusion in Section 3.2, Hydraulic Analyses, of the FIS report; and
- All input and output data, intermediate data processing products, Geographic Information System (GIS) data layers, and final products.

Activity 5 - Independent QA/QC Review of Hydraulic Analyses

Responsible Mapping Partner: FEMA (MCC)

Scope: The MCC shall review the technical, scientific, and other data submitted by Pembina County under Activity 4 to ensure that the data and modeling are consistent with FEMA standards and standard engineering practices and are sufficient to prepare the DFIRM. This independent QA/QC review of the hydraulic analyses shall include, at a minimum, the activities listed below.

- Review submittal for technical and regulatory adequacy, completeness of required information, application/certification forms, and supporting data and documentation. The technical review shall focus on the following:
 - Use of acceptable model;
 - Starting water-surface elevations;
 - Cross-section geometry;
 - Manning’s “n” values and expansion/contraction coefficients;
 - Bridge and culvert modeling;
 - Flood discharges;
 - Regulatory floodway computation methods; and
 - Tie-in to upstream and downstream non-revised Flood Profiles.
- Use the CHECK-RAS program to flag potential problems and focus review efforts.
- Maintain records of all contacts, reviews, recommendations, and actions and make them readily available to FEMA.
- Maintain an archive of all data submitted for hydraulic modeling review. (All supporting data must be retained for 3 years from the date funding recipient submits its final expenditure report to FEMA.)

Standards: All work under Activity 5 shall be performed in accordance with the standards specified in Section 5 of this Mapping Activity Statement.

Products: In accordance with the TSDN format described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, the MCC shall make the following products available to FEMA:

- A Summary Report that describes the findings of the independent QA/QC review; and
- Recommendations to resolve any problems that arise as a result of the independent QA/QC review.

Activity 6 – Floodplain Mapping (Detailed Riverine Analysis)

Responsible Mapping Partner: Pembina County

Scope: Pembina County shall delineate the 1- and 0.2-percent-annual-chance floodplain boundaries and the regulatory floodway boundaries for the studied segments of the Pembina and Tongue Rivers on a digital work map. The County shall incorporate all revised hydraulic modeling developed under Activity 4 and shall use existing topography to delineate the 1- and 0.2-percent-annual-chance floodplain and regulatory floodway boundaries. In addition, the County shall incorporate the results of all effective Letters of Map Change within the revised areas as appropriate. Also, the County shall address all concerns or questions regarding Activity 6 that are raised during the independent QA/QC review performed by the MCC under Activity 7.

Standards: All work under Activity 6 shall be performed in accordance with the standards specified in Section 5 of this Mapping Activity Statement.

Products: Upon completion, the County shall submit the digital floodplain mapping for an independent QA/QC review under Activity 7. In accordance with the TSDN format described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, the County and/or KL&J shall make the following products available to FEMA:

- Digital work maps showing the 1- and 0.2-percent-annual-chance floodplain boundary delineations, regulatory floodway boundary delineations, cross sections, Base Flood Elevations (BFEs), flood insurance risk zone labels, and all applicable base map features;
- DFIRM mapping files, prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- Metadata files describing the DFIRM data, including all required information shown in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- Complete set of plots of DFIRM panels showing all detailed flood hazard information at a suitable scale;
- A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the preparation of the DFIRM;
- Any backup or supplemental information used in the mapping required for the independent QA/QC review outlined in Activity 9; and
- An explanation for the use of existing topography for the studied reaches.

Activity 7 - Independent QA/QC Review of Floodplain Mapping

Responsible Mapping Partner: FEMA (MCC)

Scope: The MCC shall review the digital work maps submitted under Activity 6 to ensure that the results of the hydraulic analyses are accurately represented on the work maps. This work shall include, at a minimum, the activities listed below.

- Review the cross sections for proper location and orientation on the work map and agreement with the Floodway Data Table.
- Review the BFEs shown on the work map for proper location and agreement with the results of the hydraulic modeling.
- Review the regulatory floodway widths for agreement with the widths shown in the Floodway Data Table and the results of the hydraulic modeling.
- Review the floodplain boundaries for agreement with the flood elevations shown in the Floodway Data Table and the contour lines and other topographic information shown on the work maps.
- Review floodplain widths at cross sections as shown on the work maps to ensure they match the Floodway Data Table.

- Review the floodplain boundaries as shown on the work maps to ensure they match the Flood Profiles.
- Review the flood insurance risk zones as shown on the work maps to ensure they are labeled properly.
- Review the DFIRM mapping files to ensure they were prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*.
- Review the metadata files to ensure they include all required information shown in *Guidelines and Specifications for Flood Hazard Mapping Partners*.

Standards: All work under Activity 7 shall be performed in accordance with the standards specified in Section 5 of this Mapping Activity Statement.

Products: In accordance with the TSDN format described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, the MCC shall make the following products available to FEMA:

- A Summary Report that describes the findings of the independent QA/QC review noting any deficiencies and providing recommendations to resolve them or agreeing with the mapping results; and
- An annotated work map with all questions and/or concerns indicated if necessary.

Activity 8 - Base Map Acquisition and Preparation

Responsible Mapping Partner: Pembina County

Scope: Activity 8 consists of obtaining the digital base map for the project. Pembina County shall provide the digital base map. The required activities are as follows:

- Obtain digital files (raster or vector) of the base map;
- Secure necessary permissions from the map source to allow FEMA's use and distribution of hardcopy and digital map products using the digital base map, free of charge;
- Certify that the digital data meet the minimum standards and specifications that FEMA requires for DFIRM production; and
- Populate the DFIRM database for base map features and applicable data.

Standards: All work under Activity 8 shall be performed in accordance with the standards specified in Section 5 of this Mapping Activity Statement.

Products: In accordance with the TSDN format described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, the County shall make the following products available to FEMA.

- Written certification that the digital data meet the minimum FEMA standards and specifications; and
- Documentation that FEMA can use the digital base map.

Activity 9 – DFIRM Production (Non-Revised Areas)

Responsible Mapping Partners: FEMA (MCC)

Scope: The MCC shall convert the information shown on the effective FIRM and Flood Boundary and Floodway Map (FBFM) panels for all incorporated and unincorporated areas of Pembina County except the segments of the Pembina and Tongue Rivers that are being studied into digital format in conformance with FEMA DFIRM specifications. The MCC shall use the base map acquired under Activity 8 for the conversion. The scope of Activity 9 covers the digitization of approximately 20 FIRM panels and 5 FBFM panels. The MCC also shall incorporate Letters of Map Change issued by FEMA since the date of the current effective FIRM for each affected panel.

The digital flood theme for the flooding sources specified in Section 1 of this Mapping Activity Statement shall not be digitized under Activity 9. Rather, the MCC shall leave these as “holes” in the digital flood theme that will be filled in as part of Activity 10 using the digital flood data developed under Activity 6.

Standards: All work conducted under Activity 9 shall be performed in accordance with the standards specified in Section 5 of this Mapping Activity Statement.

Products: In accordance with the TSDN format requirements described in Appendix M of FEMA’s *Guidelines and Specifications for Flood Hazard Mapping Partners*, the MCC shall make the following products available to FEMA:

- Digital work maps showing the 1- and 0.2-percent-annual-chance floodplain boundary delineations, regulatory floodway boundary delineations, cross sections, BFEs, flood insurance risk zone labels, and all applicable base map features;
- DFIRM mapping files, prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- Metadata files describing the DFIRM data, including all required information shown in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- Complete set of plots of DFIRM panels showing all detailed flood hazard information at a suitable scale; and
- A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the preparation of the DFIRM, including a check that the road and floodplain relationship is maintained for all non-revised areas.

Activity 10 – DFIRM Production (Merging Effective and Revised Information)

Responsible Mapping Partner: Pembina County

Scope: Upon completion of Activities 6 and 9, Pembina County shall merge the digital floodplain data into a single updated DFIRM. This work will include tie-in of flood hazard information for areas that were not studied as part of the Flood Map Project documented in this Mapping Activity Statement. The County also shall tie in the revised and non-revised Flood Profiles, floodplain boundaries, and regulatory floodway boundaries.

Standards: All work conducted under Activity 9 be performed in accordance with the standards specified in Section 5 of this Mapping Activity Statement.

Products: In accordance with the TSDN format requirements described in Appendix M of FEMA's *Guidelines and Specifications for Flood Hazard Mapping Partners*, the County shall make the following products available to FEMA:

- Digital work maps showing the 1- and 0.2-percent-annual-chance floodplain boundary delineations, regulatory floodway boundary delineations, cross sections, BFEs, flood insurance risk zone labels, and all applicable base map features;
- DFIRM mapping files, prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- Metadata files describing the DFIRM data, including all required information shown in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- Complete set of plots of DFIRM panels showing all detailed flood hazard information at a suitable scale; and
- A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the preparation of the DFIRM.

Activity 10A – Application of DFIRM Graphic and Database Specifications

Responsible Mapping Partner: Pembina County

Scope: Pembina County shall apply the final FEMA DFIRM graphic and database specifications to the DFIRM files produced under Activity 10. This work shall include adding all required annotation, line pattern, area shading, and map collar information (e.g., map borders, title blocks, legends, notes to user).

Standards: All work under Activity 10A shall be performed in accordance with the standards specified in Section 5 of this Mapping Activity Statement.

Products: In accordance with the TSDN format described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, Pembina County and/or KL&J shall make the following products available to FEMA:

- Digital work maps showing 1-percent-annual-chance floodplain boundary delineations, cross sections, BFEs, flood insurance risk zone designation labels, and all applicable base map features shown;
- DFIRM mapping files, prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- Metadata files describing the DFIRM data, including all required information shown in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- Complete set of plots of DFIRM panels showing all detailed flood hazard information at a suitable scale; and
- A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the preparation of the DFIRM.

Activity 10B - Independent QA/QC Review of DFIRM

Responsible Mapping Partner: FEMA (MCC)

Scope: The MCC shall review the DFIRM panels and FIS report materials submitted by Pembina County under Activity 10A to ensure that the DIRM panels and the FIS report materials conform to FEMA standards as documented in *Guidelines and Specifications for Flood Hazard Mapping Partners*. This work shall include ensure that the requirements below are met.

- All required DFIRM features are accurately and legibly labeled and follow the examples shown in the FEMA DFIRM specifications. This includes all flood hazard zones, BFEs, cross sections, studied streams, mapped political entities, and all roads within and adjacent to the 1-percent-annual-chance floodplains.
- All DFIRM features are correctly symbolized with the appropriate symbol, line pattern, or area shading and follow the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*.
- All map collar information is complete, correct, and follows the requirements specified in *Guidelines and Specifications for Flood Hazard Mapping Partners*.
- DFIRM mapping files are in one of the GIS file and database formats specified in *Guidelines and Specifications for Flood Hazard Mapping Partners* and conform to those specifications for content and attribution.
- DFIRM database files are in one of the database formats specified in *Guidelines and Specifications for Flood Hazard Mapping Partners* and conform to those specifications for content and attribution.

- Metadata files describing the DFIRM data include all required information shown in *Guidelines and Specifications for Flood Hazard Mapping Partners*.
- The FIS report is prepared in the FEMA Countywide Format as documented in Appendix J of *Guidelines and Specifications for Flood Hazard Mapping Partners*.

Standards: All work conducted under Activity 10B shall be performed in accordance with the standards specified in Section 5 of this Mapping Activity Statement.

Products: In accordance with the TSDN format requirements described in Appendix M of FEMA's *Guidelines and Specifications for Flood Hazard Mapping Partners*, the MCC shall make the following products available to FEMA:

- A Summary Report that describes the findings of the independent QA/QC review, noting any deficiencies and providing recommendations to resolve them or agreeing with the mapping results;
- Annotated DFIRM panels with all questions and/or concerns indicated, if necessary; and
- Annotated FIS report materials with all questions and/or concerns indicated, if necessary.

Activity 11 – Preliminary DFIRM and FIS Report Distribution

Responsible Mapping Partner: FEMA (MCC)

Scope: Activity 11 consists of the final preparation, review, and distribution of the Preliminary copies of the DFIRM and FIS report for community and public review and comment. The activities to be performed are summarized below.

Preliminary Transmittal Letter Preparation. The MCC shall prepare letters to transmit the Preliminary copies of the DFIRM and FIS report and related enclosures to Pembina County, the State NFIP Coordinator, the FEMA Regional Office, and others as directed by FEMA.

Final QA/QC Review of Preliminary DFIRM and FIS Report: The MCC shall perform a final QA/QC review of the Preliminary DFIRM and FIS report, including all data tables, Flood Profiles, and other components of the FIS report. The QA/QC review procedures shall be consistent with the *Guidelines and Specifications for Flood Hazard Mapping Partners*.

Discrepancy Resolution: The MCC shall work with Pembina County and FEMA as appropriate to resolve discrepancies identified during the final QA/QC review.

Distribution of Preliminary DFIRM and FIS Report: The MCC shall distribute the Preliminary copies of the DFIRM and FIS report to Pembina County, the State NFIP Coordinator, the FEMA Regional Office, and others as directed by FEMA.

News Release Preparation: The MCC shall prepare news release notifications of BFE changes and perform QA/QC reviews of the notices for accuracy and compliance with FEMA format requirements. The MCC shall file the notifications for later submittal to FEMA for review.

Preliminary Summary of Map Actions (SOMA) Preparation: The MCC shall prepare Preliminary SOMAs for all affected communities in Pembina County if appropriate. The SOMA shall list pertinent information regarding Letters of Map Change that will be affected by the issuance of the DFIRM (i.e., superseded, incorporated, revalidated).

Standards: All work under Activity 11 shall be performed in accordance with the standards specified in Section 5 of this Mapping Activity Statement.

Products: The MCC shall make the following products available when requested by FEMA:

- Preliminary transmittal letters shall be prepared. These letters and any additional letters requested by FEMA shall be prepared in accordance with the current version of the *FEMA Document Control Procedures Manual*.
- Preliminary copies of the DFIRM and FIS report, including all updated data tables and Flood Profiles shall be mailed to the Chief Executive Officer (CEO) and floodplain administrator of each community in Pembina County, the State NFIP Coordinator, the FEMA Regional Office, and others as directed by FEMA.
- Preliminary SOMAs, prepared in accordance with FEMA requirements, shall be provided as appropriate.
- Revised DFIRM mapping files, prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*, shall be provided on CD-ROM.
- Revised DFIRM database files, prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*, shall be provided on CD-ROM.
- Revised metadata files describing the DFIRM data, including all required information shown in *Guidelines and Specifications for Flood Hazard Mapping Partners*, shall be provided on CD-ROM.
- A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the preparation of the DFIRM shall be provided.

Activity 12 - Post-Preliminary Processing

Responsible Mapping Partners: Pembina County and FEMA (MCC)

Scope: Activity 14 consists of finalizing the DFIRM and FIS report after the Preliminary copies of the DFIRM and FIS report have been issued for public review and comment. The activities to be performed are summarized below.

Initiation of Statutory 90-Day Appeal Period: When required, upon completion of a 30-day community comment period and/or final coordination meeting with the affected communities, the MCC shall arrange for and verify that the following activities are completed in accordance

with the current version of the FEMA *Guidelines and Specifications for Flood Hazard Mapping Partners* and *Document Control Procedures Manual*:

- Proposed BFE determination letters are sent to the community CEOs and floodplain administrators.
- News release notifications of BFE changes are published in prominent newspapers with local circulation.
- The appropriate notices (Proposed Rules) are published in the *Federal Register*.

Resolution of Appeals and Protests: Pembina County and the MCC shall support FEMA in reviewing and resolving appeals and protests received during the 90-day appeal period. For each appeal and protest, the following activities shall be conducted as appropriate:

- Initial processing and acknowledgment of submittal;
- Technical review of submittal;
- Preparation of letter(s) requesting additional supporting data;
- Performance of revised analyses; and
- Preparation of a draft resolution letter and revised DFIRM and FIS report materials for FEMA review.

The MCC shall mail all associated correspondence upon authorization by FEMA.

Preparation of Special Correspondence: Pembina County and the MCC shall support FEMA in responding to comments not received within the 90-day appeal period (referred to as “special correspondence”), including drafting responses for FEMA review when appropriate and finalizing responses when requested by FEMA. The MCC also shall mail the final correspondence (and enclosures if appropriate) and distribute appropriate copies of the correspondence and enclosures upon receipt of authorization from FEMA.

Revision of FIRM and FIS Report: If necessary, the MCC shall work together with Pembina County to revise the DFIRM and FIS report at the direction of the FEMA Regional Project Officer and distribute Revised Preliminary copies of the DFIRM and FIS report.

Final SOMA Preparation: The MCC shall prepare Final SOMAs for the affected communities as appropriate.

Processing of Letter of Final Determination: The MCC shall work with FEMA to establish the effective date for the DFIRM and FIS report, and shall prepare a Letter of Final Determination (LFDs) for each affected community for FEMA review in accordance with the FEMA *Document Control Procedures Manual*. The MCC also shall mail the final signed LFDs and enclosures and distribute appropriate copies of the signed LFDs and enclosures upon receipt of authorization from FEMA.

Processing of Final DFIRM and FIS Report for Printing: The MCC shall prepare final reproduction materials for the DFIRM and FIS report and provide these materials to the FEMA Map Service Center for printing by the U.S. Government Printing Office. The MCC also shall prepare the appropriate paperwork to accompany the DFIRM and FIS report (including Print Processing Worksheet, Printing Requisition Forms, and Community Map Actions Form) and transmittal letters to the community CEOs.

Revalidation Letter Processing. The MCC shall prepare and distribute letters to the community CEOs and floodplain administrators to notify the affected communities about Letters of Map Change for which determinations will remain in effect after the DFIRM and FIS report become effective.

Archiving Data: The MCC shall ensure that technical and administrative support data are packaged in the FEMA required format and stored properly in the library archives until they are transmitted to the FEMA Engineering Study Data Package Facility.

Standards: All work under Activity 14 shall be performed in accordance with the standards specified in Section 5 of this Mapping Activity Statement.

Products: In accordance with the requirements provided in the current version of the FEMA *Guidelines and Specifications for Flood Hazard Mapping Partners* and *Document Control Procedures Manual*, Pembina County and/or the MCC shall make the following products available to FEMA as appropriate:

- Documentation that the news releases were published in accordance with FEMA requirements;
- Documentation that the appropriate *Federal Register* notices (Proposed and Final Rules) were published in accordance with FEMA requirements;
- Draft and final Special Correspondence (and all associated enclosures, backup data, and other related information) for FEMA review and signature as appropriate;
- Draft and final Appeal and Protest acknowledgment, additional data, and resolution letters (and all associated enclosures, backup data, and other related information) for FEMA review and signature as appropriate;
- Draft and final LFDs (and all associated enclosures, backup data, and other related information) for FEMA review and signature;
- DFIRM negatives and final FIS report materials, including all updated data tables and Flood Profiles;
- Paperwork for the final DFIRM and FIS report materials;
- Transmittal letters for the printed DFIRM and FIS report;
- Letter of Map Change Revalidation Letters if appropriate; and
- Complete, organized archived technical and administrative support data.

2. Technical and Administrative Support Data Submittal:

The Project Team members for this Flood Map Project that have responsibilities for activities included in this Mapping Activity Statement shall comply with the data submittal requirements summarized below.

All supporting documentation for the activities in this Mapping Activity Statement shall be submitted in the Technical Support Data Notebook (TSDN) format in accordance with Appendix M, Subsection M.2.1 of FEMA's *Guidelines and Specifications for Flood Hazard Mapping Partners*, dated February 2002. Appendix M is available for viewing or download on the FEMA Web site at http://www.fema.gov/mit/tsd/frm_gsam.pdf. Table 2-1 indicates the sections of the TSDN that apply to each mapping activity.

Table 2-1. Mapping Activities and Applicable TSDN Sections

TSDN Section	Mapping Activities													
	1			2	3	4	5	6	7	8	9	10, 10A, 10B	11	12
General Documentation														
Special Problem Reports	X			X	X	X	X	X	X	X	X	X	X	X
Telephone Conversation Reports	X			X	X	X	X	X	X	X	X	X	X	X
Meeting Minutes/Reports	X			X	X	X	X	X	X	X	X	X	X	X
General Correspondence	X			X	X	X	X	X	X	X	X	X	X	X
Engineering Analyses														
Hydrologic Analyses	X			X	X	X	X	X	X					
Hydraulic Analyses	X			X	X	X	X	X	X					
Key to Cross-Section Labeling	X			X	X	X	X	X	X					
Key to Transect Labeling	X			X	X	X	X	X	X					
Draft FIS Report				X	X	X	X							
Mapping Information								X	X	X	X	X	X	X
Miscellaneous Reference Information	X			X	X	X	X	X	X	X	X	X	X	X

If any issues arise that could affect the completion of an activity within the proposed scope or budget, the responsible Mapping Partner shall complete a Special Problem Report (SPR) as soon as possible after the issue is identified and submitted to FEMA. The SPR should describe the issue and propose possible resolutions. (For additional information on SPRs, refer to Appendix M, Subsection M.2.1.1 of *Guidelines and Specifications for Flood Hazard Mapping Partners*.)

Additionally, the MCC shall collect and maintain a set of products for all Activities and shall compile a comprehensive TSDN for the entire project.

3. Period of Performance:

The mapping activities outlined in this Mapping Activity Statement will begin on September 30, 2002, and will be completed no later than October 31, 2004. The mapping activities may be terminated at the option of FEMA or Pembina County in accordance with the provisions of the Partnership Agreement dated May 21, 2002.

4. Funding/Cost-Sharing:

5. Standards:

The standards relevant to this Mapping Activity Statement are provided in Tables 5-1 and 5-2. Information on the correct volume, appendix, section, or subsection of FEMA's *Guidelines and Specifications for Flood Hazard Mapping Partners* (February 2002) to be referenced for each mapping activity are summarized in Table 5-2.

These Guidelines are available for viewing or download from the FEMA Flood Hazard Mapping Web site at http://www.fema.gov/mit/tsd/dl_cgs.htm.

Table 5-1. Applicable Standards for Mapping Activities

Applicable Standards	Activities													
	1			2	3	4	5	6	7	8	9	10, 10A, 10B	11	12
<i>Guidelines and Specifications for Flood Hazard Mapping Partners</i> , February 2002	X			X	X	X	X	X	X	X	X	X	X	X
American Congress on Surveying and Mapping (ACSM) procedures	X													
Global Positioning System (GPS) Surveys: National Geodetic Survey (NGS-58), "Guidelines for Establishing GPS-Derived Ellipsoid Heights," November 1997	X													
EM 1000-1-1000, <i>Photogrammetric Mapping</i> , March 31, 1993	X													
EM 1110-2-1003, <i>Hydrographic Surveys</i> , October 31, 1994	X													
Numerical Models Accepted by FEMA for NFIP Usage, January 11, 2002				X	X	X	X							
<i>Content Standards for Digital Geospatial Metadata</i> (Federal Geographic Data Committee, 1998)								X	X	X	X	X	X	X
<i>Document Control Procedures Manual</i> , December 2000												X	X	X

Table 5-2. Mapping Activities and Applicable Portions of FEMA *Guidelines and Specifications*

Activity Number	Activity Description	Applicable Volume, Section/Subsection, and Appendix
1	Field Surveys and Reconnaissance	Volume 1, Sections 1.2, 1.3, 1.4 (specifically Subsection 1.4.2.1) Appendix A, Sections A.5, A.6, A.7, and A.8 Appendices B, C, and M
2	Hydrology	Volume 1, Section 1.4 (specifically Subsections 1.4.2.2 and 1.4.2.4) Appendix C, Sections C.1 and C.7 Appendices E, F, G, H, and M
3	Independent QA/QC Review of Hydrology	Volume 1, Section 1.4 (specifically Subsection 1.4.1) Appendix C, Section C.2 Appendices E, F, G, H, and M
4	Hydraulic Analyses	Volume 1, Section 1.4 (specifically Subsections 1.4.2.2 and 1.4.2.4) Appendix A, Section A.4 (specifically Subsection A.4.7) Appendix C, Sections C.3 and C.7 Appendices B, E, F, G, H, and M
5	Independent QA/QC Review of Hydraulic Analyses	Volume 1, Section 1.4 (specifically Subsection 1.4.1) Appendix A, Section A.4 (specifically Subsection A.4.7) Appendix C, Section C.5 Appendices B, E, F, G, H, and M
6	Floodplain Mapping (Detailed Riverine Analysis)	Volume 1, Section 1.4 (specifically Subsection 1.4.2.3) Appendix C, Sections C.4 and C.6 Appendices K, L, and M

Table 5-2. Mapping Activities and Applicable Portions of FEMA *Guidelines and Specifications* (Cont'd)

Activity Number	Activity Description	Applicable Volume, Section/Subsection, and Appendix
7	Independent QA/QC Review of Floodplain Mapping	Volume 1, Section 1.4 (specifically Subsections 1.4.1 and 1.4.2.3) ----- Appendix C, Sections C.4 and C.6 ----- Appendices D, K, L, and M
8	Base Map Acquisition and Preparation	Volume 1, Sections 1.3 (specifically Subsection 1.3.1.8) and 1.4 (specifically Subsection 1.4.3) ----- Appendices A and B
9	DFIRM Production (Non-Revised Areas)	Volume 1, Section 1.4 (specifically Subsections 1.4.2.3 and 1.4.3.2) ----- Appendices K, L, and M
10	Merging of Revised and Non-Revised Information	Volume 1, Section 1.4 (specifically Subsections 1.4.2.3 and 1.4.3.3) ----- Appendices K and L
10A	Application of DFIRM Graphic and Database Specifications	Volume 1, Section 1.4 (specifically Subsection 1.4.3) ----- Appendices K and L
10B	Independent QA/QC Review of Final DFIRM and FIS Report	Volume 1, Section 1.4 (specifically Subsection 1.4.3) ----- Appendices K and L
12	Preparation and Issuance of Preliminary FIS and DFIRM	Volume 1, Sections 1.4 (specifically Subsections 1.4.2 and 1.4.3) and 1.5 (specifically Subsection 1.5.1) ----- Appendices J, K, L, and M
13	Post-Preliminary Processing	Volume 1, Section 1.5 ----- Appendices J, K, L, and M

6. Schedule:

The mapping activities for this Mapping Activity Statement shall be completed in accordance with the schedule below. If changes to this schedule are required, the responsible Mapping Partner shall coordinate with FEMA and the other Mapping Partners in a timely manner.

ACTIVITY	RESPONSIBLE PARTNERS	DATE DUE
Activity 1 – Field Surveys and Reconnaissance	CTP	11-30-02
Activity 2 – Hydrologic Analyses	CTP	01-28-03
Activity 3 – Independent QA/QC Review of Hydrologic Analyses	FEMA (MCC)	02-28-03
Activity 4 – Hydraulic Analyses	CTP	04-31-03
Activity 5 – Independent QA/QC Review of Hydraulic Analyses	FEMA (MCC)	05-31-03
Activity 6 – Floodplain Mapping (Detailed Riverine Analysis)	CTP	06-30-03
Activity 7 – Independent QA/QC Review of Floodplain Mapping	FEMA (MCC)	07-31-03
Activity 8 – Base Map Acquisition and Preparation	CTP	01-28-03
Activity 9 – DFIRM Production (Non-Revised Areas)	FEMA (MCC)	07-31-03
Activity 10 – DFIRM Production (Merging Effective and Revised Information)	CTP	08-31-03
Activity 10A – Application of DFIRM Graphic and Database Specifications	CTP	08-31-03
Activity 10B – Independent QA/QC Review of DFIRM and FIS Report	FEMA (MCC)	10-15-03
Activity 11 – Preliminary DFIRM and FIS Report Distribution	FEMA (MCC)	11-15-03
Activity 12 – Post-Preliminary Processing	CTP and FEMA (MCC)	10-15-04

7. Certification:

The following certifications apply to this Mapping Activity Statement:

Activity 1 (Field Surveys and Reconnaissance)

A Registered Professional Engineer or Licensed Land Surveyor will certify topographic data, in accordance with 44 CFR 65.5(c). Certification of topographic data by the American Society for Photogrammetry and Remote Sensing is also acceptable.

Activity 2 (Hydrologic Analyses), Activity 4 (Hydraulic Analyses), and Activity 6 (Floodplain Mapping– Detailed Riverine Analysis)

- A Registered Professional Engineer or Licensed Land Surveyor will certify hydrologic and hydraulic analyses and data in accordance with 44 CFR 65.6(f).
- A Registered Professional Engineer or Licensed Land Surveyor will certify topographic information in accordance with 44 CFR 65.5(c).
- Any levee systems to be accredited will be certified in accordance with 44 CFR 65.10(e)..

Activity 6 (Floodplain Mapping – Detailed Riverine Analysis), Activity 9 (DFIRM Production – Non-Revised Areas), Activity 10 (DFIRM Production – Merging Effective and Revised Information), and Activity 10A (Application of DFIRM Database and Graphic Specifications)

The DFIRM metadata files will include a description of the horizontal and vertical accuracy of the DFIRM base map and floodplain information.

Activity 8 (Base Map Acquisition and Preparation)

- A community official or responsible party will provide written certification that the digital data meet FEMA's minimum standards and specifications.
- The responsible Mapping Partner will provide documentation that the digital base map can be used by FEMA.

8. Technical Assistance and Resources:

Pembina County may obtain copies of FEMA-issued Letters of Map Change, archived technical and administrative support data, and data collected as part of the FEMA Mapping Needs Assessment Process from the MCC. The MCC may be contacted by telephone at (703) 317-6531 or by facsimile at (703) 329-3023.

General technical and programmatic information, such as FEMA 265, the Quick-2 computer program, and the MT-2 application/certification forms package, can be downloaded from the FEMA Flood Hazard Mapping Web site (www.fema.gov/mit/tsd/).

Specific technical and programmatic support may be provided through the MCC. Such assistance should be requested through the MCC Project Officer at FEMA Headquarters specified in Section 11 of this Mapping Activity Statement.

Pembina County also may consult with the FEMA Regional Project Officer to request support in the areas of selection of data sources, digital data accuracy standards, assessment of vertical data accuracy, data collection methods or subcontractors, and GIS-based engineering and modeling training.

9. Contractors:

Pembina County intends to use the services of KL&J as a contractor for this Flood Map Project. The County shall ensure that the procurement for all contractors used for this Flood Map Project complies with the requirements of 44 CFR 13.36.

Part 13 may be downloaded in PDF or text format from the U.S. Government Printing Office Web site at http://www.access.gpo.gov/nara/cfr/waisidx_01/44cfr13_01.html.

10. Financial Reporting:

Financial reporting requirements will be in accordance with Cooperative Agreement Articles V and VI.

11. Points of Contact:

The points of contact for this Flood Map Project are John Liou, P.E., C.F.M., the FEMA Regional Project Officer; Becky Ault, the Project Manager for Pembina County; or subsequent personnel of comparable experience who are appointed to fulfill these responsibilities. The assistance of the MCC should be requested through Mike Grimm, the MCC Project Officer at FEMA Headquarters.

Each party has caused this Mapping Activity Statement to be executed by its duly authorized representative.

Corene Vaughn.

Corene Vaughn, Chairman
Pembina County Commission

9-17-02

Date

for [Signature]

John Liou, P.E., C.F.M.
Regional Project Officer
Federal Emergency Management Agency

9-23-02

Date

Robert R. Cuy for

Mike Grimm
MCC Project Officer
Federal Insurance and Mitigation Administration

9/23/02

Date